

WHAT IS CLAIMED IS

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1. An information storage apparatus for recording, reproducing and/or erasing information with respect to a recording medium, comprising:

- servo error generation detecting means for
- 10 detecting a generation of a servo error based on at least one of servo signals including a focus error signal and a tracking error signal which are derived from output signals of a light receiving element; and
- data recording resuming means for temporarily
- 15 interrupting a data recording with respect to the recording medium, temporarily turning OFF a servo and then turning ON the servo again, to thereafter synchronize recording data to recorded data already recorded on the recording medium, and resume recording
- 20 of the recording data continuing without a discontinuity to an end of the recorded data recorded immediately before the interruption of the data recording, when the servo error generation detecting means detects the generation of the servo error while recording data on
- 25 the recording medium.

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control means for resuming the recording of the recording data at a recording rate identical to a recording rate immediately before the recording is

interrupted if a number of times the servo error is detected by the servo error generation detecting means is less than a predetermined number, and changing the recording rate so as not to generate the servo error if

5 the number of times the servo error is detected is greater than or equal to the predetermined number, when resuming the recording by the data recording resuming means.

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5. An information storage apparatus for recording, reproducing and/or erasing information with

15 respect to a recording medium, comprising:

servo error generation detecting means for detecting a generation of a servo error based on at least one of servo signals including a focus error signal and a tracking error signal which are derived

20 from output signals of a light receiving element; and

data recording resuming means for temporarily interrupting a data recording with respect to the recording medium, temporarily turning OFF only a tracking servo without turning OFF all servos and then

25 turning ON the tracking servo again, to thereafter

synchronize recording data to recorded data already recorded on the recording medium, and resume recording of the recording data continuing without a discontinuity to an end of the recorded data recorded immediately

- 5 before the interruption of the data recording, when the servo error generation detecting means detects the generation of the servo error while recording data on the recording medium.

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6. The information storage apparatus as claimed in claim 5, wherein the servo error generation
15 detecting means includes means for detecting the generation of the servo error when a servo signal makes a transition from a signal level in a stable state of the servo signal to a state where the signal level is deviated by a predetermined threshold value.

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7. The information storage apparatus as
25 claimed in claim 5, further comprising:

rate changing means for changing a recording rate so as not to generate the servo error when resuming the recording by the data recording resuming means.

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8. The information storage apparatus as claimed in claim 7, further comprising:

10 control means for resuming the recording of the recording data at a recording rate identical to a recording rate immediately before the recording is interrupted if a number of times the servo error is detected by the servo error generation detecting means
15 is less than a predetermined number, and changing the recording rate so as not to generate the servo error if the number of times the servo error is detected is greater than or equal to the predetermined number, when
20 resuming the recording by the data recording resuming means.

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9. An information storage apparatus for

recording, reproducing and/or erasing information with respect to a recording medium, comprising:

ATIP signal detecting means for detecting an ATIP signal based on output signals from a light receiving
5 element;

ATIP decoding and ATIP error detecting means for decoding the ATIP signal detected by the ATIP signal detecting means to reproduce information included in the ATIP signal and to detect an ATIP error;

10 ATIP error measuring means for measuring the ATIP error detected by the ATIP decoding and ATIP error detecting means to output an ATIP error rate; and

data recording resuming means for temporarily interrupting a data recording with respect to the
15 recording medium, to synchronize recording data to recorded data already recorded on the recording medium, and resume recording of the recording data continuing without a discontinuity to an end of the recorded data recorded immediately before the interruption of the data
20 recording, when the ATIP error measuring means detects an increase of the ATIP error rate while recording data on the recording medium.

10. The information storage apparatus as claimed in claim 9, further comprising:

rate changing means for changing a recording rate so as not to increase the ATIP error rate when resuming
5 the recording by the data recording resuming means.

10 11. The information storage apparatus as claimed in claim 10, further comprising:

control means for resuming the recording of the recording data at a recording rate identical to a recording rate immediately before the recording is
15 interrupted if the ATIP error rate output from the ATIP error measuring means increases and a number of times the increase of the ATIP error rate is detected by the servo error generation detecting means is less than a predetermined number, and changing the recording rate so
20 as not to increase the ATIP error rate if the number of times the increase of the ATIP error rate is detected is greater than or equal to the predetermined number, when resuming the recording by the data recording resuming means.

12. An information storage apparatus for recording, reproducing and/or erasing information with respect to a recording medium, comprising:

ATIP signal detecting means for detecting an ATIP
5 signal based on output signals from a light receiving element;

ATIP decoding and ATIP error detecting means for decoding the ATIP signal detected by the ATIP signal detecting means to reproduce information included in the
10 ATIP signal and to detect an ATIP error;

ATIP error measuring means for measuring the ATIP error detected by the ATIP decoding and ATIP error detecting means to output an ATIP error rate; and

data recording resuming means for temporarily
15 interrupting a data recording with respect to the recording medium, and changing a lens position related to the data recording by carrying out a carriage moving operation, to thereafter synchronize recording data to recorded data already recorded on the recording medium,
20 and resume recording of the recording data continuing without a discontinuity to an end of the recorded data recorded immediately before the interruption of the data recording, when the ATIP error measuring means detects an increase of the ATIP error rate while recording data
25 on the recording medium.

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15. An information storage apparatus for recording, reproducing and/or erasing information with respect to a recording medium, comprising:

shock and vibration detecting means for detecting
5 shock, vibration or the like applied with respect to the information storage apparatus; and

data recording resuming means for temporarily interrupting a data recording with respect to the recording medium when the shock and vibration detecting
10 means detects the shock, vibration or the like while recording data on the recording medium, and for synchronizing recording data to recorded data already recorded on the recording medium, and resuming recording of the recording data continuing without a discontinuity
15 to an end of the recorded data recorded immediately before the interruption of the data recording when the shock and vibration detecting means no longer detects the shock, vibration or the like.

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16. The information storage apparatus as claimed in claim 15, further comprising:

25 rate changing means for changing a recording rate

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so as not to generate the shock, vibration or the like when resuming the recording by the data recording resuming means.

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17. The information storage apparatus as claimed in claim 16, further comprising:

- 10 control means for resuming the recording of the recording data at a recording rate identical to a recording rate immediately before the recording is interrupted if the number of times the shock, vibration or the like is detected by the shock and vibration
- 15 detecting means is less than a predetermined number, and for changing the recording rate so as not to generate the shock, vibration or the like if the number of times the shock, vibration or the like is detected is greater than or equal to the predetermined number, when resuming
- 20 the recording by the data recording resuming means.

- 25 18. The information storage apparatus as

claimed in claim 15, wherein the shock and vibration detecting means includes means for detecting the shock, vibration or the like based on a tracking error signal.

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19. The information storage apparatus as claimed in claim 15, wherein the shock and vibration
10 detecting means includes means for detecting the shock, vibration or the like based on a focus error signal.

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20. The information storage apparatus as claimed in claim 15, wherein the shock and vibration detecting means includes means for detecting the shock, vibration or the like based on a reflectivity detection
20 signal.

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21. An information storage apparatus for

recording, reproducing and/or erasing information with respect to a recording medium, comprising:

temperature measuring means for measuring a temperature within the information storage apparatus;

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data recording resuming means for temporarily interrupting a data recording with respect to the recording medium when the temperature measuring means measures a high temperature which is greater than or
10 equal to a predetermined temperature while recording data on the recording medium, and synchronizing recording data to recorded data already recorded on the recording medium and resuming recording of the recording data continuing without a discontinuity to an end of the
15 recorded data recorded immediately before the interruption of the data recording when the temperature measured by the temperature measuring means becomes less than the predetermined temperature.

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22. The information storage apparatus as claimed in claim 21, wherein the data recording resuming
25 means includes means for detecting a high temperature

state when a difference between the temperature measured
by the temperature measuring means during the data
recording and an initial temperature measured before a
start of the data recording exceeds a predetermined
5 threshold value.

10 23. The information storage apparatus as
claimed in claim 21, further comprising:
rate changing means for changing a recording rate
so as not to generate a high temperature state when
resuming the recording by the data recording resuming
15 means.

20 24. The information storage apparatus as
claimed in claim 23, further comprising:
control means for resuming the recording of the
recording data at a recording rate identical to a
recording rate immediately before the recording is
25 interrupted if a number of times the high temperature

state is detected is less than a predetermined number,
and for reducing the recording rate in steps so as not
to generate the high temperature state if the number of
times the high temperature state is detected is greater
5 than or equal to the predetermined number, when resuming
the recording by the data recording resuming means.

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